

Laboratory's aircraft coatings test facility trims paint cost, hazardous wastes

by Materials and Manufacturing Directorate

WRIGHT-PATTERSON AFB, OHIO — It has been a busy couple of years for the Air Force Research Laboratory Materials and Manufacturing Directorate Coatings Technology Integration Office (CTIO). The facility, which just opened in May 1998, is now paying dividends to the entire Air Force community.

"Since our grand opening, we have been extremely busy working aircraft coatings assessment and integration projects," CTIO Program Manager Maj. Barnard Ghim said. "The Air Force is always looking for ways to reduce our hazardous waste. Air Force Material Command Civil Engineering has been very aggressive in having us look at ways to reduce pollution in the way the Air Force depaints and paints aircraft."

The CTIO facility is designed to test and transition new paint coatings, while increasing the performance and environmental compliance of current aircraft paint coatings. The CTIO assists in the Air Force effort to reduce the effects of corrosion, and helps Department of Defense customers ensure compliance with environmental guidelines.

"One of our success stories is the non-chromated tie-coat," Ghim said. "The standard way to repaint an aircraft using the scuff sand and overcoat method consists of sanding and roughening up the old topcoat and spraying new primer and topcoat over the old topcoat. Air Force primers contain hazardous chromates to inhibit corrosion. With increasing restrictions on hazardous materials, some bases faced exceeding chromate exposure levels for painters working in some older facilities when spraying the chromated primer."

Directorate personnel worked with industry to develop a coating system without chromates that met all the requirements of the chromated primer, minus the corrosion inhibition. "The CTIO integrated the material for field use by testing the material for compatibility with existing coating systems and checked the material's performance at simulated field conditions," Ghim said. "The material passed with flying colors and has been working great, eliminating a potential show-stopping hazardous material problem for the Air Force."

The ultimate goal is to improve paint coating systems performance for the Air Force's aging aircraft fleet, thereby reducing costs, stretching resources, and decreasing the environmental impact.

The showcase component of this facility is the environmentally controlled "Paint Booth." This unique and one of a kind paint booth has the capability to simulate temperature and relative humidity conditions in order to replicate "real world" painting conditions of the field units and depots. Troubleshooting paint coating problems can be done in the booth at the same environmental conditions experienced in the field during application and curing. Everything from large (6' x 6') to small (3' x 5") aircraft parts and test pieces can be painted and cured in the paint booth and then tested in other CTIO test areas within Building 22B.

A smaller CTIO coating removal technology test facility is operated at Warner-Robins Air Logistics Center, Robins AFB, GA. "These facilities will allow the CTIO to perform its mission of integrating and supporting coatings transition onto Air Force weapon systems," said Lt. Col. Gilbert Fairley, chief of AFRL's Logistics Systems Support Branch.

"CTIO test areas offer the latest in state-of-the-art coating evaluation technology," Fairley said. "Coatings systems can be analyzed, evaluated and compared using numerous test methods to determine the systems ability to meet field conditions and environmental regulations." From application through aging — to removal, paint coating systems can be taken apart via wet, dry, and general properties testing so that their behavior in the field can be accurately predicted.

Operating as a single point of contact for the ALCs and field units on paint and coating-related issues, the CTIO staff cross-feeds lessons learned to ALCs, field units and other DoD organizations.

For more information on the CTIO and its activities, call (937) 255-0945, or visit: <http://www.ml.wpafb.af.mil/facilities/ctio/>. @